WIX3001 SOFT COMPUTING

ASSIGNMENT 1: MATLAB PROGRAMMING

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17201819/2

Q1. The dataset

1. clean_seed_dataset.csv
   UCI Machine Learning Repository: seeds Data Set
   - Samples: 210
   - Features: 7
   - Classes: 3

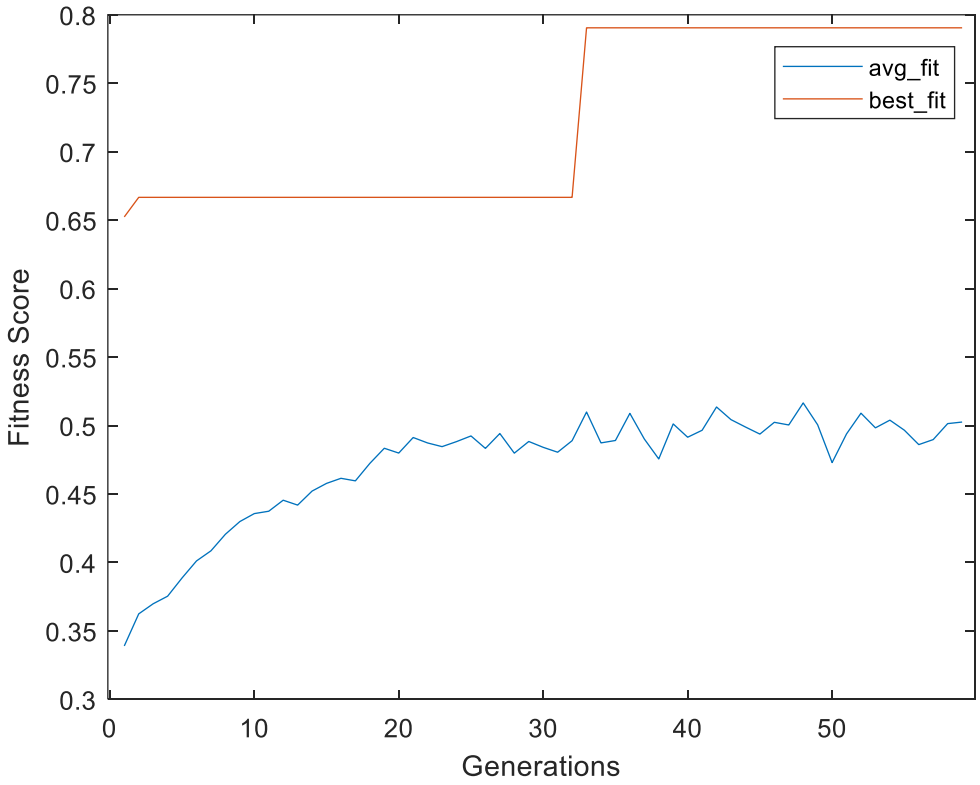
2. clean_raisin_dataset.csv
   UCI Machine Learning Repository: Raisin Dataset Data Set
   - Samples: 900
   - Features: 6
   - Classes: 2

3. Clean_yeast_data.csv
   UCI Machine Learning Repository: Yeast Data Set
   - Samples: 1484
   - Features: 8
   - Classes: 10

EXERCISE 2

Seed Dataset

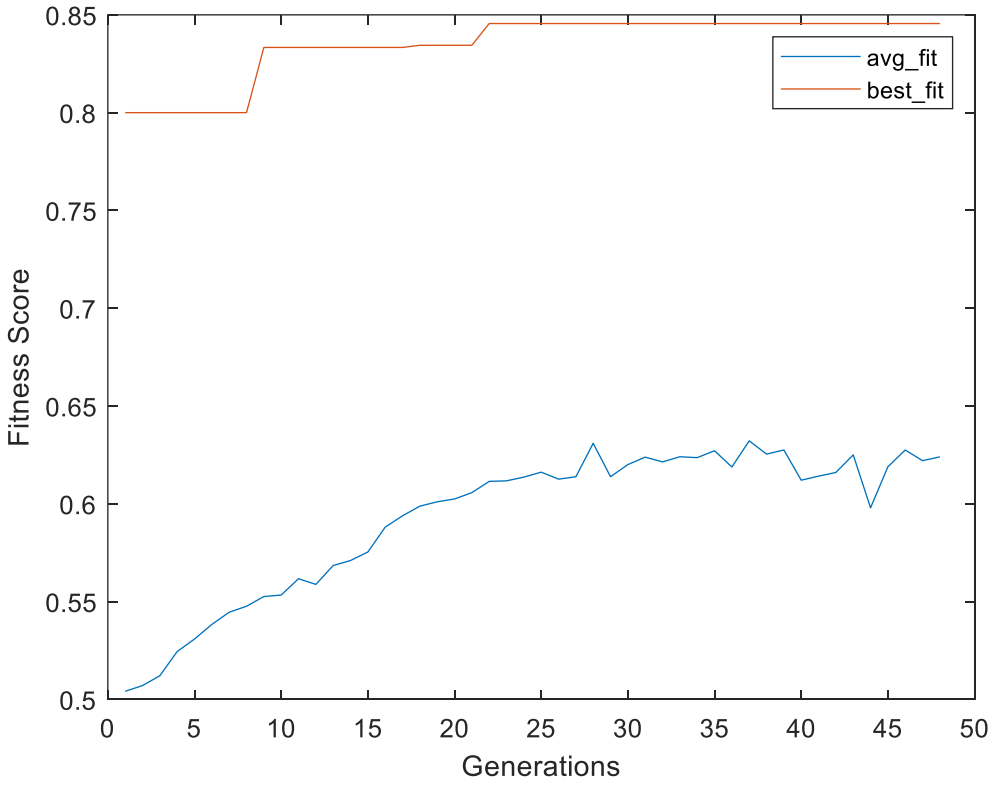
Input layer units:	7
Hidden layer:	2
Hidden layer units:	[8, 6]
Output layer units:	3
Population size:	100
Generations Max:	1000
Selection rate:	0.5
Mutation rate:	0.5
Convergence rate:	10



Average Fitness Score:	0.50257
Best Fitness Score:	0.79048

Raisin Dataset

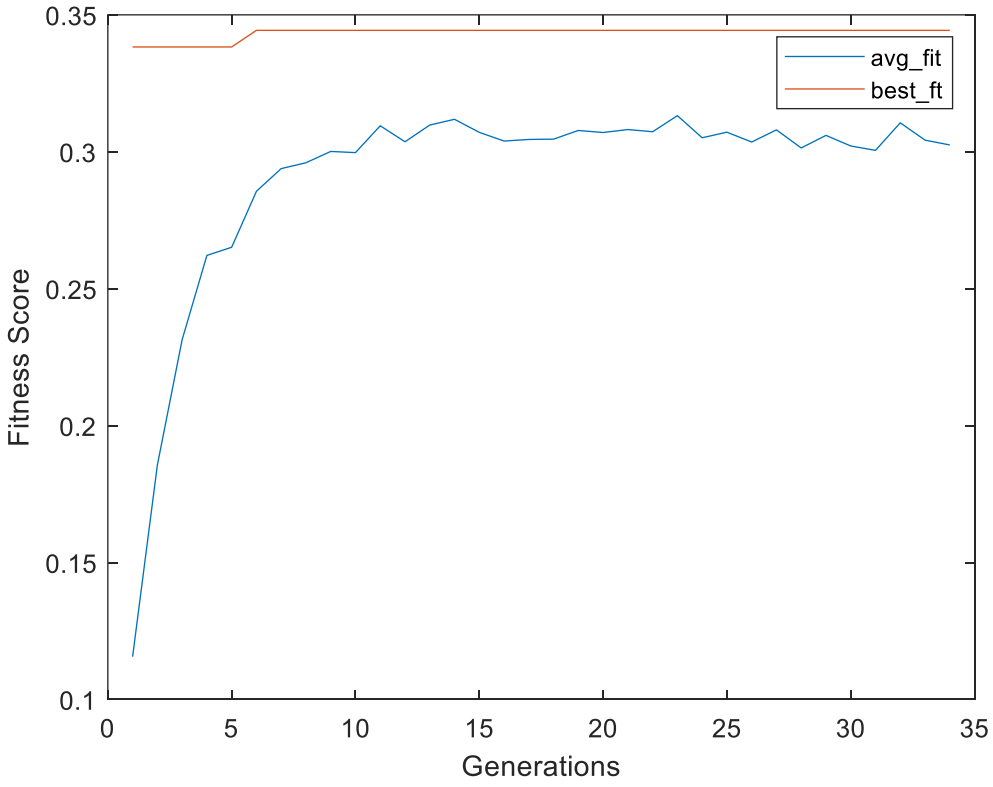
Input layer units:	6
Hidden layer:	2
Hidden layer units:	[8, 6]
Output layer units:	2
Population size:	100
Generations Max:	1000
Selection rate:	0.5
Mutation rate:	0.5
Convergence rate:	10



Average Fitness Score:	0.62404
Best Fitness Score:	0.84556

Yeast Dataset

Input layer units:	8
Hidden layer:	2
Hidden layer units:	[8, 6]
Output layer units:	10
Population size:	100
Generations Max:	1000
Selection rate:	0.5
Mutation rate:	0.5
Convergence rate:	10



Average Fitness Score:	0. 30249
Best Fitness Score:	0. 34434

EXERCISE 3 & 4

Population size: 50
Generations Max: 250
Selection rate: 0.5
Mutation rate: 0.5
Convergence rate: 10

<table>
<tr><td></td><td></td><td colspan="2">Generation = 1</td><td colspan="3">Generation = Last Generation</td><td></td></tr>
<tr><td></td><td>Seed</td><td>Avg Fitness</td><td>Max Fitness</td><td>Avg Fitness</td><td>Max Fitness</td><td>Number of Layers
*Based on top three</td><td>Number of Units for Each Layer
*Based on top three</td></tr>
<tr><td>Seed</td><td>17</td><td>0.32362</td><td>0.61429</td><td>0.67295</td><td>0.94286</td><td>1
Mean(1,2,3) = 2
Std(1,2,3) = 1</td><td>[13]
<table>
<tr><td></td><td>13</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>7</td><td>10</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>11</td><td>7</td><td>5</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Avg</td><td>10.3333</td><td>8.5000</td><td>5.0000</td><td></td><td></td><td></td></tr>
<tr><td>StDev</td><td>3.0551</td><td>2.1213</td><td></td><td></td><td></td><td></td></tr>
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</table>

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<td>20</td>
<td>0.32933</td>
<td>0.60000</td>
<td>0.70886</td>
<td>0.83333</td>
<td>1
Mean(1,2,3) = 2
Std(1,2,3) = 1</td>
<td>[10]
<table>
<tr><td></td><td>10</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>18</td><td>9</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>9</td><td>13</td><td>8</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Avg</td><td>12.3333</td><td>11.0000</td><td>8.0000</td><td></td><td></td><td></td></tr>
<tr><td>StDev</td><td>4.9329</td><td>2.8284</td><td></td><td></td><td></td><td></td></tr>
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<tr>
<td></td>
<td>18</td>
<td>0.34276</td>
<td>0.64762</td>
<td>0.85305</td>
<td>0.90952</td>
<td>1
Mean(1,2,4) = 2.3333
Std(1,2,4) = 1.5275</td>
<td>[13]
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<tr><td></td><td>7</td><td>14</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>9</td><td>13</td><td>14</td><td>4</td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Avg</td><td>9.6667</td><td>13.5000</td><td>14.0000</td><td>4.0000</td><td></td><td></td></tr>
<tr><td>StDev</td><td>3.0551</td><td>0.7071</td><td></td><td></td><td></td><td></td></tr>
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<td>Raisin</td>
<td>19</td>
<td>0.51011</td>
<td>0.76667</td>
<td>0.86349</td>
<td>0.87444</td>
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Mean(1,2,5) = 2.6667
Std(1,2,5) = 2.0817</td>
<td>[20]
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<tr><td></td><td>9</td><td>7</td><td></td><td></td><td></td><td></td></tr>
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<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Avg</td><td>13.0000</td><td>8.5000</td><td>10.0000</td><td>14.0000</td><td>11.0000</td><td></td></tr>
<tr><td>StDev</td><td>6.0828</td><td>2.1213</td><td></td><td></td><td></td><td></td></tr>
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<td></td>
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<td>0.48633</td>
<td>0.82222</td>
<td>0.75829</td>
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<td>2
Mean(1,2,4) = 2.6667
Std(1,2,4) = 1.5275</td>
<td>[10, 11]
<table>
<tr><td></td><td>19</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>10</td><td>11</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>16</td><td>11</td><td>15</td><td>9</td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Avg</td><td>15.0000</td><td>11.0000</td><td>15.0000</td><td>9.0000</td><td></td><td></td></tr>
<tr><td>StDev</td><td>4.5826</td><td>0.0000</td><td></td><td></td><td></td><td></td></tr>
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<td>0.49069</td>
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<td>0.86944</td>
<td>0.87444</td>
<td>1
Mean(1,2,4) = 2.6667
Std(1,2,4) = 1.5275</td>
<td>[15]
<table>
<tr><td></td><td>15</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>12</td><td>16</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>19</td><td>9</td><td>17</td><td>12</td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Avg</td><td>15.3333</td><td>12.5000</td><td>17.0000</td><td>12.0000</td><td></td><td></td></tr>
<tr><td>StDev</td><td>3.5119</td><td>4.9497</td><td></td><td></td><td></td><td></td></tr>
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<tr>
<td>Yeast</td>
<td>02</td>
<td>0.09535</td>
<td>0.31334</td>
<td>0.37469</td>
<td>0.37803</td>
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Mean(1,5,6) = 4.0000
Std(1,5,6) = 2.6458</td>
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<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Avg</td><td>12.0000</td><td>7.0000</td><td>11.0000</td><td>9.5000</td><td>9.0000</td><td>12.0000</td></tr>
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<td>0.31322</td>
<td>0.36253</td>
<td>4
Mean(1,2,4) = 2.6667
Std(1,2,4) = 1.5275</td>
<td>[14, 10, 11, 9]
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<tr><td></td><td>11</td><td>9</td><td></td><td></td><td></td><td></td></tr>
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<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Avg</td><td>12.6667</td><td>9.5000</td><td>11.0000</td><td>9.0000</td><td></td><td></td></tr>
<tr><td>StDev</td><td>1.5275</td><td>0.7071</td><td></td><td></td><td></td><td></td></tr>
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<td></td>
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<td>0.087776</td>
<td>0.31199</td>
<td>0.38637</td>
<td>0.38949</td>
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Mean(1,2,3) = 2.0000
Std(1,2,3) = 1.0000</td>
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<tr><td></td><td>4</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>11</td><td>18</td><td></td><td></td><td></td><td></td></tr>
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<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Avg</td><td>9.0000</td><td>14.0000</td><td>8.0000</td><td></td><td></td><td></td></tr>
<tr><td>StDev</td><td>4.3589</td><td>5.6569</td><td></td><td></td><td></td><td></td></tr>
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